

## Two new species of *Tethya* (Porifera, Demospongiae) from New Caledonia

by Michele SARÀ

**Abstract.** — Two new species of *Tethya* (Porifera, Demospongiae), *T. novaecaledoniae* n. sp. and *T. levii* n. sp., on specimens collected in deep waters (240-460 m) along the coasts of New Caledonia, are here described. Internal buds are present in *T. levii*.

**Résumé.** — Deux nouvelles espèces de *Tethya* (Porifera, Demospongiae), *T. novaecaledoniae* n. sp. et *T. levii* n. sp. sont décrites d'après des spécimens récoltés en eaux profondes (240-460 m) sur les côtes de Nouvelle-Calédonie. Des bourgeons internes sont présents chez *T. levii*.

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A series of papers on the sponges of New Caledonia has been recently published (LÉVI, 1967; LÉVI et LÉVI, 1982, 1983; DESQUEYROUX-FAUNDEZ, 1984, 1987), but they do not include any record on *Tethya* species. This genus is hitherto poorly known from the whole Pacific tropical region.

Two species of *Tethya* are here described on specimens coming from the collections of the Muséum national d'Histoire naturelle (MNHN) of Paris. They have been collected by the "Jean Charcot" Expedition (1985), BIOCAL, in moderate deep waters (240-460 m). These species give information only on the bathyal New-Caledonian *Tethya*; the New-Caledonian shallow-water forms of this genus are presently unknown.

### ***Tethya novaecaledoniae* n. sp.**

(Fig. 1; pl. I)

HOLOTYPE : MNHN D CL 3552.

LOCALITY : New Caledonia, Stat. DW64, 24°47'9 S-168°09'1 E, 250 m, Exp. "Jean Charcot", BIOCAL 1985.

#### DESCRIPTION

The holotype, the only specimen collected, is subspherical, a little pyriform. It is likely that the narrowed region is the apical one because at its top opens an oscule of elliptical shape (1 × 0,5 mm).

Size : 2 cm in diameter. Colour (in ethanol preserved specimen) : both cortex and medulla whitish.

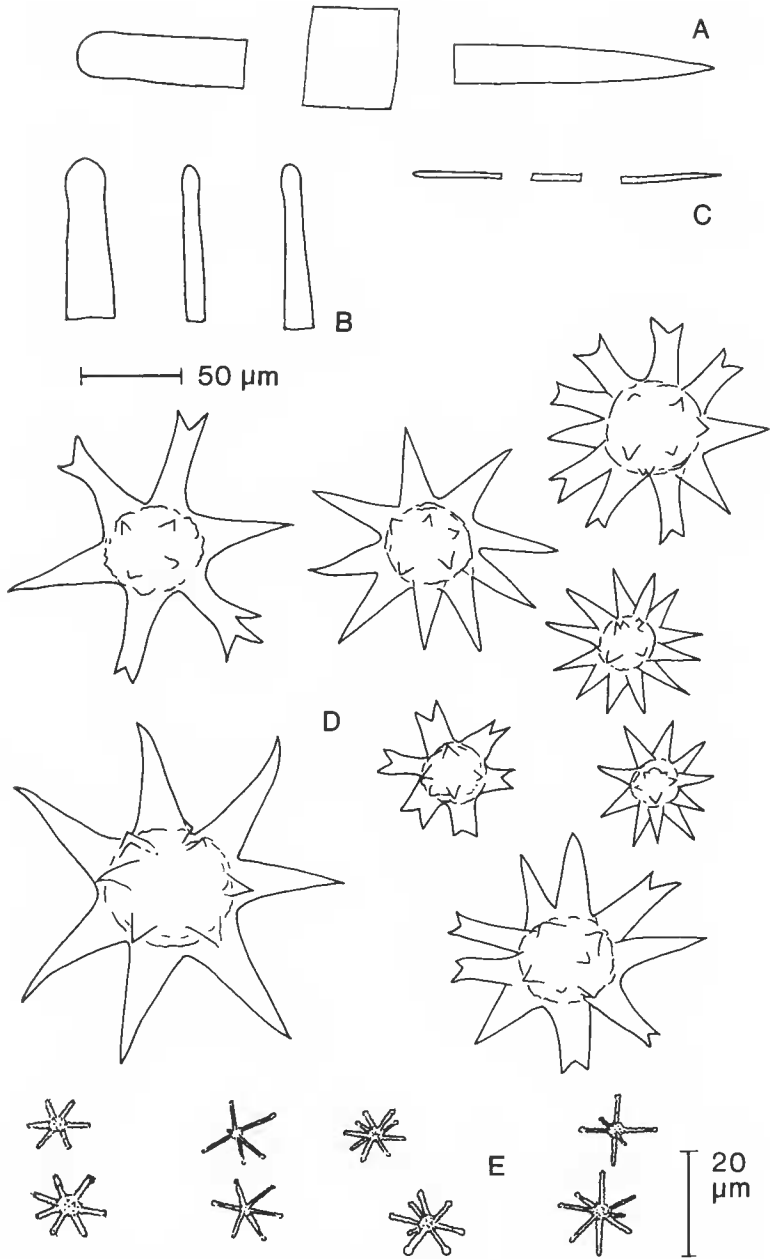
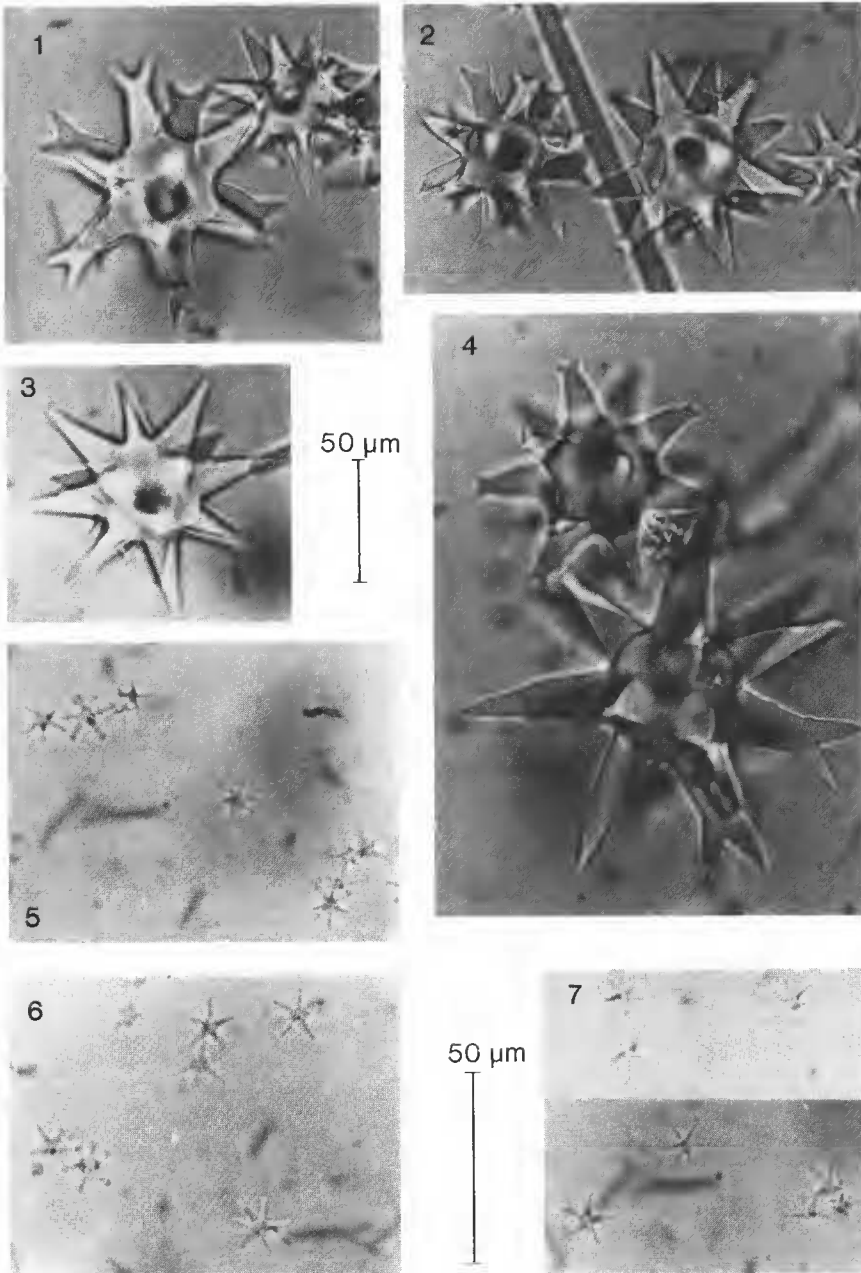


FIG. 1. — *Tethya novaecaledoniae* n. sp. : A, main style ; B, proximal end of styles ; C, slender style ; D, oxyspherasters ; E, micrasters.



PL. I. — *Tethya novaecaledoniae* n. sp. : 1-4, oxyspherasters; 5-7, micrasters.

Surface : With scarcely prominent, flattened and rounded tubercles (papillae), 2 mm in diameter and 0.5 mm in height. On one side of the sponge there is a group of irregularly rounded depressions (0.5-2 mm wide and 1 mm deep) of uncertain origin and significance.

Cortex : Relatively thin, 1-1.5 mm. Subdermal lacunae of 0.3-0.5 mm visible to the unaided eye. Megasters evenly distributed into the whole cortex and smaller and more scattered in the outer layer of the choanosome. Micrasters densely packed on the surface of the cortex and distributed into the whole cortex and the outer region of the choanosome. Collagen layer in the endocortex well developed. Cortex and choanosome in close contact without interposed lacunae.

### *Spicules*

a — Styles (strongyloxeas) : Variable in size and shape. The swelling at the proximal end, when occurring, is slightly marked. Main category :  $700-2750 \times 20-50 \mu\text{m}$ ; slender medullar :  $500-700 \times 2-3 \mu\text{m}$ ; small cortical :  $300-350 \times 9-10 \mu\text{m}$ .

b — Oxyspherasters : Variable in size. In the cortex :  $40-150 \mu\text{m}$  (diameter), more frequently  $100-120 \mu\text{m}$ . In the choanosome :  $40-100 \mu\text{m}$ . In the cortex the oxyspherasters show frequently shortened and apically forked rays. Index R/C (length of ray/diameter of the centre) = 0.8-1.2; in the oxyspherasters with normal rays R/C = 1.2. Number of rays = 14-24.

c — Micrasters : Similar in the cortex and in the choanosome. Generally chiaster-like but with a frequent tendency towards the tylaster type and, more rarely, the oxyaster type. With roughened rays and often a small swelling at the top of the rays. Centre small or lacking. Number of rays : 8-14. Diameter :  $10-15 \mu\text{m}$ .

### REMARKS

*T. novaecaledoniae* is distinguished from the other species of the genus by a peculiar association of the megasters traits (shape, dimensions, body arrangement) and the micrasters features.

The oxyspheraster and micraster shape may recall that occurring in some specimens of *T. citrina* (SARÀ and MELONE, 1965) with reduced oxyspheraster R/C. However this species is well distinct from the european *T. citrina* by :

- the arrangement of the oxyspherasters in the whole cortex and not only around the lacunae;
- the greater diameter of the oxyspherasters;
- the frequent occurrence of shortened and forked oxyspheraster rays;
- the total lack of distinction between the cortical and the choanosomal micrasters.

### ***Tethya levii* n. sp.**

(Fig. 2; pl. II, III)

HOLOTYPE : MNHN D CL 3553. PARATYPES : MNHN D CL 3554.

LOCALITY : New Caledonia, Stat. DW44,  $22^{\circ}47'3\text{S}-167^{\circ}14'3\text{E}$ , 440-450 m; CP 45,  $22^{\circ}47'3\text{S}-167^{\circ}14'9\text{E}$ , 430-465 m; Exped. "J. Charcot", BIOCAL, 1985.

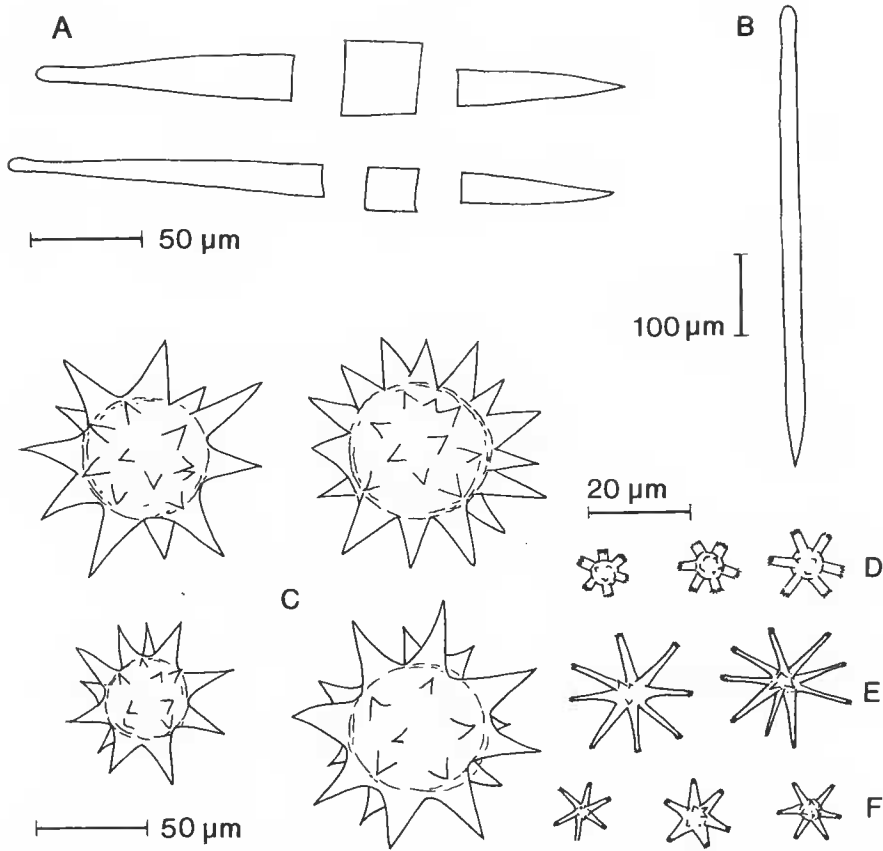


FIG. 2. — *Tethya levii* n. sp. : A, main styles; B, small style; C, spherasters; D, cortical tylasters; E, oxyasters; F, medullar tylasters.

### DESCRIPTION

All the specimens are subspherical.

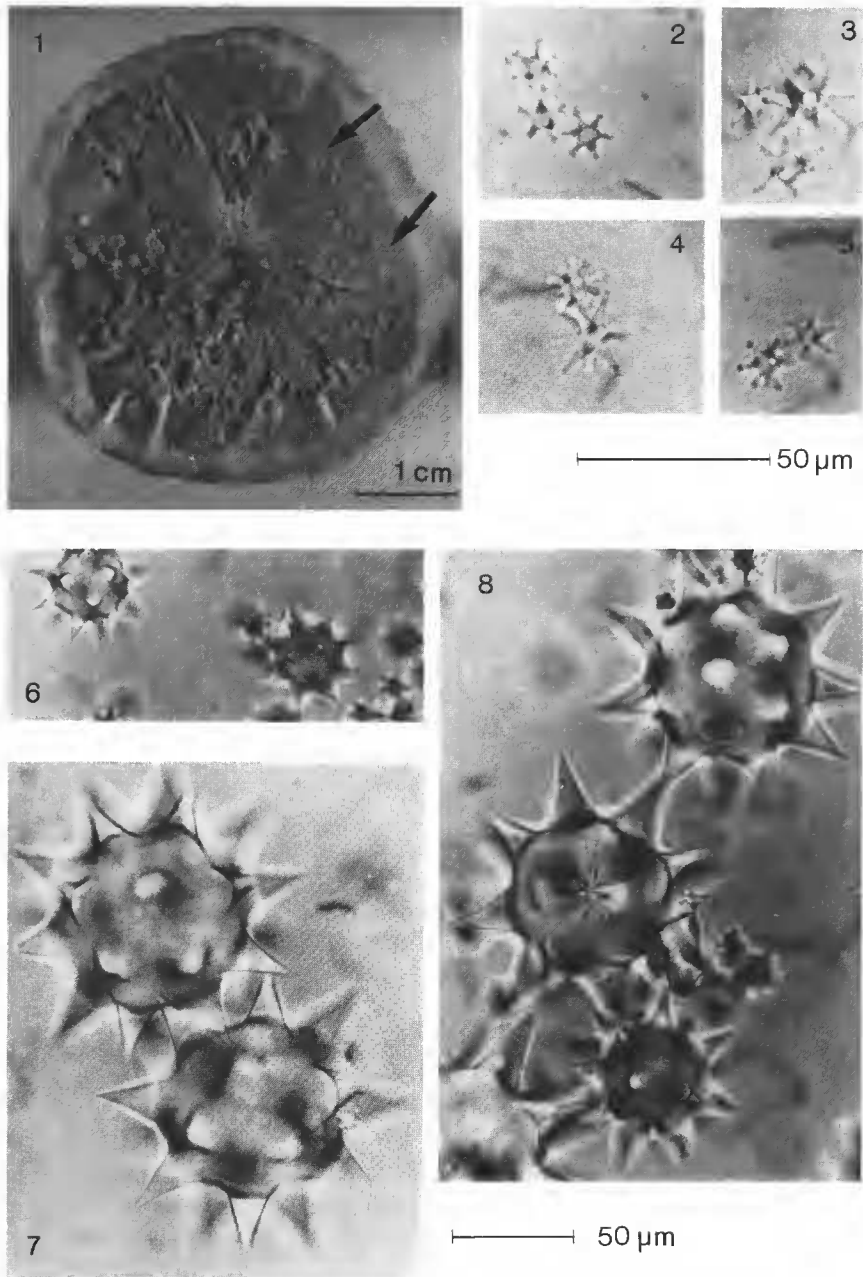
Size : holotype  $4 \times 4.5$  cm; paratypes :  $3 \times 4$  cm. Colour (in ethanol preserved specimens) : holotype whitish, paratypes brownish.

Surface : With tubercles (papillae) flattened and little prominent in the holotype, more prominent in the paratypes. With rounded outlines, 3 mm wide, 1-1.5 mm high.

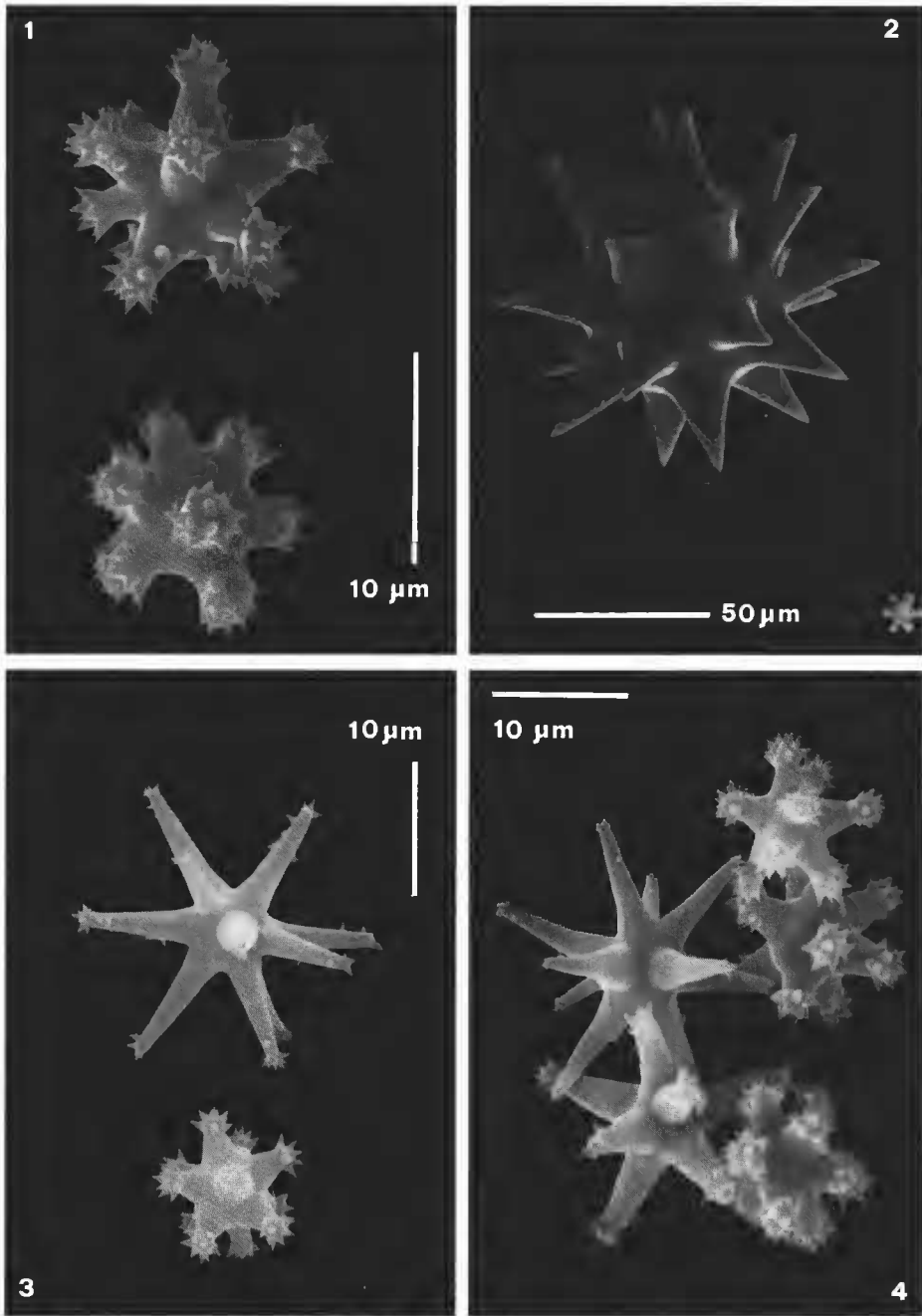
Consistence (in ethanol) : hard.

Cortex : 3-4 mm thick. With small subdermal as well as subcortical lacunae. Spherasters present into the whole cortex and into the outer layers of the choanosome. Tylasters form a dense covering on the surface and occur into the whole cortex and into the outer layers of the choanosome, where are also present larger oxyasters.

Internal buds (gemmules) : Many internal buds occur into the choanosome of the holotype. They are of subspherical shape, 1-2 mm in diameter, and covered by a cortical layer



PL. II. — *Tethya levii* n. sp. : 1, section of the sponge (holotype) showing buds (arrows); 2, cortical tylasters; 3-5, medullary oxyasters and tylasters; 6-8, spherasters.



PL. III. — *Tethya levii* n. sp., SEM micrographs of spicules : 1, tylasters; 2, spheraster and tylander; 3-4, oxyaster and tylander.

of micrasters : tylasters of  $10\mu\text{m}$  similar to those of the mother sponge with some small spherasters and some small radial styles. The internal buds shall be described in detail elsewhere.

### *Spicules*

a — Styles (strongyloxeas) : Variable in size and shape. The proximal rounded end is generally very narrowed. Main category :  $1\ 450\text{-}2\ 500 \times 40\text{-}50\mu\text{m}$  ; small category :  $360\text{-}540 \times 8\text{-}20\mu\text{m}$ .

b — Spherasters : Variable in size and smaller in the choanosome. Diameter :  $30\text{-}170\mu\text{m}$  (mostly  $80\text{-}150\mu\text{m}$ ).  $R/C = 0.5$  ( $0.3\text{-}0.7$ ). Rays number = 24-30.

c — Micrasters : Tylasters uniform and with a large centre. Diameter :  $10\text{-}15\mu\text{m}$ . In the choanosome, besides the tylasters, similar to those of the cortex, larger oxyasters generally with spiny ray ends and sometimes with spines along the ray. Without centre or with a small centre ; diameter :  $18\text{-}30\mu\text{m}$ . Rays number of micrasters : mostly 12.

### REMARKS

The species more similar to *T. levii* is apparently *T. fissurata* Lend., 1888 (type revision in HALLMANN 1914). *T. levii* differs by :

- the lack of stalk ;
- the shape of megascleres which are generally styles and not strongyles ;
- the shape of megasters which are spherasters with  $R/C = 0.5$  and not oxyspherasters with  $R/C = 1\text{-}2$  ;
- tylasters and oxyasters smaller and less separated in different categories.

Furthermore *T. levii* has been found in much deeper waters. The occurrence of internal buds in *T. levii* is a very peculiar character and distinguishes this species from the generality of *Tethya* which are commonly provided with external buds. However it is interesting to note that in *T. fissurata* from Port Jackson (Australia) supposed “embryos” with radially arranged stylote megascleres and a superficial layer of tylasters have been described (HALLMANN, 1914). It is likely that they also are internal buds. In the *Tethya* collections of the British Museum of Natural History, I have found a slide attributed to *T. magna*, a South African species, labelled “embryos”. The supposed embryos however lack spicules and may be hard to interpret.

*T. levii* is dedicated to the eminent spongologist Claude LÉVI, who has kindly lended to me for study the New-Caledonian *Tethya* material also signalling the occurrence of internal buds in one specimen.

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